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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER
GODBOLD, DOUGLAS

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/716,873	MANU ET AL.
	Examiner	Art Unit	
	DOUGLAS C. GODBOLD	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 March 2008*.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-36* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1.   This Office Action is in response to correspondence filed March 18, 2008 in

reference to application 11/009,925. Claims 1-36 are pending and have been examined.

Response to Amendment

2.   The amendment filed March 18, 2008 has been accepted and considered in this

office action. Claims 1, 7, 14, 17, 21, 26, 30, and 34 have been amended.

Response to Arguments

3.   Applicant's arguments filed March 18, 2008 have been fully considered but they

are not persuasive.

4.   In response to applicant's argument that the references fail to show certain

features of applicant's invention, it is noted that the features upon which applicant relies

(i.e., that the time frequency table in the present invention includes data of scalar type.)

are not recited in the rejected claim(s). Although the claims are interpreted in light of

the specification, limitations from the specification are not read into the claims. See *In

re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Rejections - 35 USC § 103

5.   The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

Claims 1, 3-5, 7-12, 14, 16-22, 24, 26-28, 30, 31, and 33-36 rejected under 35

U.S.C. 103(a) as being unpatentable over HARTUNG et al. (Patent No. US 5,309,232)

in view of HOLMES et al. (Speech Synthesis and Recognition).

6.   Regarding **claim 1**, HARTUNG teaches an encoding method comprising:

(b) searching for a nearest neighbor block of a block being currently encoded

(see column 3, lines 33-60, equation 1), and generating information on the nearest

neighbor block ("side information indicating which pixels are repeated from the previous

frame", column 3, lines 62-64); and

(c) generating a bitstream containing the generated information on the nearest

neighbor block ("multiplexed onto communication channel 345 for transmission to a

decoder", column 4, lines 8-9).

However, HARTUNG does not disclose:

(a) performing a time-frequency transformation on the input audio signal,

generating a time-frequency band table by dividing the transformed input audio signal

into a plurality of frequency blocks in each frame and a time-frequency index

combination.

In the same field of media analysis, HOLMES discloses an audio signal that is

used to create an image. HOLMES teaches a digital audio signal encoding method

("generating spectrograms", p. 23, paragraph 2) comprising:

(a) performing a time-frequency transformation on the input audio signal (Fourier transform is used, page 23 paragraph 1), generating a time-frequency band table (see Figure 2.11, "use the horizontal dimension for time, the vertical dimension for frequency", p. 23, paragraph 1) by dividing the transformed input audio signal into a plurality of frequency blocks in each frame and a time-frequency index combination (paragraph 2, the plot shows the value of the Fourier transform at a particular time at a particular frequency. Each pixel becomes a frequency block at each frame, forming a time-frequency index.).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the image encoding method of HARTUNG on the spectrogram of HOLMES, where each pixel of the spectrogram corresponds to the energy of the audio signal at single time and frequency, and a small column of pixels corresponds to the energy in a subband at a single time. This would have been done in order to more efficiently encode the spectrogram by taking advantage of the temporal correlations within the subbands (see HARTUNG, column 3, lines 9-12).

7.   Regarding **claim 3**, HARTUNG and HOLMES further teach that the nearest neighbor block information is index information of the nearest neighbor block, which is searched for, in the time-frequency band table ("side information indicating which pixels are repeated from the previous frame", HARTUNG, column 3, lines 62-64, where the previous frame has an index at i,j, and t, see equation 1).

8.   Regarding **claim 4**, HARTUNG further teaches {hat in step (b) a search scope of

the nearest neighbor block includes blocks previous to the block being currently

encoded (see equation 1, x(i,j,t) occurs before x(i,j,t-1)).

9.   Regarding **claim 5**, HARTUNG further teaches that in step (b) determination of

the nearest neighbor block is based on the Euclidian distance between the current block

and an object block (see equation 1, Ix(i,j,t) -x(i,j,t-1)I is the distance between x(i,j,t) and

x(i,j,t-1)).

10.   Regarding **claim 7**, HARTUNG teaches an encoding method comprising:

        (b) searching for a nearest neighbor block of a block being currently encoded

(see column 3, lines 33-60, equation 1);

        (c) based on the nearest neighbor block searched for, determining whether or not

a block being currently encoded is a redundant block (see column 3, lines 33-60,

equation 1); and

        (d) based on the result determined in step (c), generating an output bitstream

("multiplexed onto communication channel 345 for transmission to a decoder", column

4, lines 8-9).

        However, HARTUNG does not disclose:

        (a) performing a time-frequency transformation on the input audio signal,

generating a time-frequency band table by dividing the transformed input audio signal

into a plurality of frequency blocks in each frame and a time-frequency index

combination;

In the same field of media analysis, HOLMES discloses an audio signal that is

used to create an image. HOLMES teaches a digital audio signal encoding method

("generating spectrograms", p. 23, paragraph 2) comprising:

(a) performing a time-frequency transformation on the input audio signal (Fourier

transform is used, page 23 paragraph 1), generating a time-frequency band table (see

Figure 2.11, "use the horizontal dimension for time, the vertical dimension for

frequency", p. 23, paragraph 1) by dividing the transformed input audio signal into a

plurality of frequency blocks in each frame and a time-frequency index combination

(paragraph 2, the plot shows the value of the Fourier transform at a particular time at a

particular frequency. Each pixel becomes a frequency block at each frame, forming a

time-frequency index.).

It would have been obvious to a person of ordinary skill in the art at the time the

invention was made to use the image encoding method of HARTUNG on the

spectrogram of HOLMES, where each pixel of the spectrogram corresponds to the

energy of the audio signal at single time and frequency, and a small column of pixels

corresponds to the energy in a subband at a single time. This would have been done in

order to more efficiently encode the spectrogram by taking advantage of the temporal

correlations within the subbands (see HARTUNG, column 3, lines 9-12).

11.   Regarding **claim 8**, HARTUNG further teaches that if it is determined in step (c)
that the block being currently encoded is the redundant block, the bitstream generated
in step (c) includes nearest neighbor block information on the nearest neighbor block
searched for in step (b), instead of current block information ("side information indicating
which pixels are repeated from the previous frame", column 3, lines 62-64).

12.   Regarding **claim 9**, HARTUNG and HOLMES further teach that the nearest
neighbor block information is index information of the nearest neighbor block, which is
searched for in the time-frequency band table ("side information indicating which pixels
are repeated from the previous frame", HARTUNG, column 3, lines 62-64, where the
previous ,frame has an index at i,j, and t, see equation 1).

13.   Regarding **claim 10**, HARTUNG further teaches that if it is determined in step (c)
that the block being currently encoded is not the redundant block, the bitstream
generated in step (d) includes current block information (see equation 1, the current x is
used if the distance is less than the threshold).

14.   Regarding **claim 11**, HARTUNG further teaches that in step (b) a search scope
of the nearest neighbor block includes blocks previous to the block being currently
encoded (see equation 1, x(i,j,t) occurs before x(i,j,t-1)).

15.   Regarding **claim 12**, HARTUNG further teaches that in step (b) determination of

the nearest neighbor block is based on the Euclidian distance between the current block

and an object block (see equation 1, Ix(i,j,t) - x(i,j,t-1)I is the distance between x(i,j,t) and

x(i,j,t-1)).

16.   Regarding **claim 14**, HARTUNG teaches an encoding apparatus comprising:

a nearest neighbor block searching and nearest neighbor block information

generation unit which searches for a nearest neighbor block of a block being currently

encoded (see column 3, lines 33-60, equation 1), and generates information on the

nearest neighbor block ("side information indicating which pixels are repeated from the

previous frame", column 3, lines 62-64); and

a bitstream packing unit which generates a bitstream containing the generated

information on the nearest neighbor block ("multiplexed onto communication channel

345 for transmission to a decoder", column 4, lines 8-9).

However, HARTUNG does not disclose a time-frequency band table generation

unit which generates a time-frequency band table by dividing an input audio signal, on

which time- frequency transformation is performed, into a plurality of frequency blocks in

each frame and a time-frequency index combination.

In the same field of media analysis, HOLMES discloses an audio signal that is

used to create an image. HOLMES teaches a digital audio signal encoding apparatus

("generating spectrograms", p. 23, paragraph 2) comprising:

a time-frequency band table generation unit which generates a time-frequency band table (see Figure 2.11, "use the horizontal dimension for time, the vertical dimension for frequency", p. 23, paragraph 1) by dividing an input audio signal, on which time- frequency transformation is performed, into a plurality of frequency blocks in each frame and a time-frequency index combination (paragraph 2, the plot shows the value of the Fourier transform at a particular time at a particular frequency. Each pixel becomes a frequency block at each frame, forming a time-frequency index.).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the image encoding method of HARTUNG on the spectrogram of HOLMES, where each pixel of the spectrogram corresponds to the energy of the audio signal at single time and frequency, and a small column of pixels corresponds to the energy in a subband at a single time. This would have been done in order to more efficiently encode the spectrogram by taking advantage of the temporal correlations within the subbands (see HARTUNG, column 3, lines 9-12).

17.   Regarding **claim 16**, HARTUNG and HOLMES further teaches that the nearest neighbor block information is index information of the nearest neighbor block, which is searched for in the time-frequency band table ("side information indicating which pixels are repeated from the previous frame", HARTUNG, column 3, lines 62-64, where the previous frame has an index at i,j, and t, see equation 1).

18.   Regarding **claim 17**, HARTUNG teaches an encoding apparatus comprising:

a nearest neighbor block searching unit which searches for a nearest neighbor block of a block being currently encoded (see column 3, lines 33-60, equation 1);

a redundant block decision unit which, based on the nearest neighbor block, determines whether or not the block being currently encoded is a redundant block (see column 3, lines 33-60, equation 1); and

a bitstream packing unit which, based on the result determined in the redundant block decision unit, generates an output bitstream ("multiplexed onto communication channel 345 for transmission to a decoder", column 4, lines 8-9).

However, HARTUNG does not disclose a time-frequency band table generation unit which generates a time-frequency band table by dividing an input audio signal, on which time- frequency transformation is performed, into a plurality of frequency blocks in each frame and a time-frequency index combination.

In the same field of media analysis, HOLMES discloses an audio signal that is used to create an image. HOLMES teaches a digital audio signal encoding apparatus ("generating spectrograms", p. 23, paragraph 2) comprising:

a time-frequency band table generation unit which generates a time-frequency band table (see Figure 2.11, "use the horizontal dimension for time, the vertical dimension for frequency", p. 23, paragraph 1) by dividing an input audio signal, on which time- frequency transformation is performed, into a plurality of frequency blocks in each frame and a time-frequency index combination (paragraph 2, the plot shows the value of the Fourier transform at a particular time at a particular frequency. Each pixel becomes a frequency block at each frame, forming a time-frequency index.).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the image encoding method of HARTUNG on the spectrogram of HOLMES, where each pixel of the spectrogram corresponds to the energy of the audio signal at single time and frequency, and a small column of pixels corresponds to the energy in a subband at a single time. This would have been done in order to more efficiently encode the spectrogram by taking advantage of the temporal correlations within the subbands (see HARTUNG, column 3, lines 9-12).

19.   Regarding **claim 18**, HARTUNG further teaches that if the redundant block decision unit determines that the block being currently encoded is the redundant block, the bitstream generation unit includes information on the nearest neighbor block which is searched for in the nearest neighbor block searching unit, in the output bitstream instead of current block information ("side information indicating which pixels are repeated from the previous frame", column 3, lines 62-64).

20.   Regarding **claim 19**, HARTUNG further teaches that if the redundant decision unit determines that the block being currently encoded is not the redundant block, the bitstream generation unit includes the current block information in the output bitstream (see equation 1, the current x is used if the distance is less than the threshold).

21.   Regarding **claim 20**, HARTUNG and HOLMES further teach that the nearest neighbor block information is index information of the nearest neighbor block, which is

searched for in the time-frequency band table ("side information indicating which pixels

are repeated from the previous frame", HARTUNG, column 3, lines 62-64, where the

previous frame has an index at i,j, and t, see equation 1).

22.   Regarding **claim 21**, HARTUNG teaches a decoding method ("decoder", column

5, line 31) for decoding a signal containing additional information ("side information",

column 5, line 33) on a predetermined region of the signal ("remaining subbands",

column 3, lines 7-10), comprising:

    (a) decoding a block which is not included in the predetermined region

("determine which areas of the subbands.., have been zeroed out", column 5, lines 34-

38), from an input bitstream ("coded signals", column 5, line 32);

    (b) performing a time-frequency transformation on the decoded block data,

generating an image corresponding to the predetermined region ("performs the

operations of the subband analysis unit 300 in reverse to reconstruct the images",

column 5, lines 42-43); and

    (c) reconstructing a current block included in the predetermined region

("determine which areas of the subbands have been repeated from the previously

encoded subband", column 5, lines 34-36), based on the additional information ("side

information", column 5, line 33) on the predetermined region of the signal ("remaining

subbands", column 3, lines 7-10).

    However HARTUNG does not disclose that decoding is done on an audio signal

or that the image is a time-frequency band table formed by dividing the transformed

decoded block data into a plurality of frequency blocks in each frame and a time-frequency index combination.

In the same field of media analysis, HOLMES discloses an image that represents an audio signal. HOLMES teaches a time-frequency band table ("spectrogram", see Figure 2.11) formed by dividing the transformed decoded block data into a plurality of frequency blocks in each frame and a time-frequency index combination (paragraph 2, the plot shows the value of the Fourier transform at a particular time at a particular frequency. Each pixel becomes a frequency block at each frame, forming a time-frequency index).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the image decoding method of HARTUNG on the spectrogram of HOLMES, where each pixel of the spectrogram corresponds to the energy of the audio signal at single time and frequency, and a small column of pixels corresponds to the energy in a subband at a single time. This would have been done in order to more efficiently decode the spectrogram by taking advantage of the temporal correlations within the subbands (see HARTUNG, column 3, lines 9-12).

23.   Regarding **claim 22**, HARTUNG further teaches that the additional information includes index information on a nearest neighbor block of a current block in the predetermined region ("side information indicating which pixels are repeated from the previous frame", column 3, lines 62-64, where the previous frame has an index at i,j, and t, see equation 1).

24.   Regarding **claim 24**, HARTUNG and HOLMES further teach the time-frequency band table generated in step (b) is updated by the current block reconstructed in step (c) ("determine which areas of the subbands have been repeated from the previously encoded subband", HARTUNG, column 5, lines 34-36, using the repeated subbands to generate the image is inherent).

25.   Regarding **claim 26**, HARTUNG teaches a decoding method ("decoder", column 5, line 31) for decoding a signal comprising:

        (a) extracting nearest neighbor block information ("side information", column 5, line 33) from an input bitstream ("coded signals", column 5, line 32);

        (b) performing a time-frequency transformation on the bitstream, generating an image ("performs the operations of the subband analysis unit 300 in reverse to reconstruct the images", column 5, lines 42-43);

        (c) based on the extracted nearest neighbor block information, determining whether or not a block being currently decoded is a redundant block ("determine which areas of the subbands have been repeated from the previously encoded subband", column 5, lines 34-36); and

        (d) if the block being currently decoded is the redundant block, reconstructing the redundant block ("determine which areas of the subbands have been repeated from the previously encoded subband", column 5, lines 34-36) based on the extracted nearest neighbor block information ("side information", column 5, line 33).

However HARTUNG does not disclose that decoding is done on an audio signal or that the image is a time-frequency band table formed by dividing the transformed decoded block data into a plurality of frequency blocks in each frame and a time-frequency index combination.

In the same field of media analysis, HOLMES discloses an image that represents an audio signal. HOLMES teaches a time-frequency band table ("spectrogram", see Figure 2.11) formed by dividing the transformed decoded block data into a plurality of frequency blocks in each frame and a time-frequency index combination (paragraph 2, the plot shows the value of the Fourier transform at a particular time at a particular frequency. Each pixel becomes a frequency block at each frame, forming a time-frequency index).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the image decoding method of HARTUNG on the spectrogram of HOLMES, where each pixel of the spectrogram corresponds to the energy of the audio signal at single time and frequency, and a small column of pixels corresponds to the energy in a subband at a single time. This would have been done in order to more efficiently decode the spectrogram by taking advantage of the temporal correlations within the subbands (see HARTUNG, column 3, lines 9-12).

26.   Regarding **claim 27**, HARTUNG and HOLMES further teach reconstructing an entire spectrum corresponding to the input audio bitstream by using the reconstructed redundant block ("performs the operations of the subband analysis unit 300 in reverse

to reconstruct the images", HARTUNG, column 5, lines 42-43, where the image is a

complete spectrogram according to HOLMES, the spectrogram representing the entire

spectrum of an audio signal, see HOLMES, Figure 2.11).

27.   Regarding **claim 28**, HARTUNG and HOLMES further teach that step (c) further

comprises:

        updating the time-frequency band table based on the reconstructed redundant

block ("determine which areas of the subbands have been repeated from the previously

encoded subband", HARTUNG, column 5, lines 34-36, using the repeated subbands to

generate the image is inherent).

28.   Regarding **claim 30**, HARTUNG teaches a decoding apparatus ("decoder",

column 5, line 31) for decoding a signal containing additional information ("side

information", column 5, line 33) on a predetermined region of the signal ("remaining

subbands", column 3, lines 7-10) comprising:

        a decoding unit which decodes a block which is not included in the

predetermined region ("determine which areas of the subbands.., have been zeroed

out", column 5, lines 34-38), from an input bitstream ("coded signals", column 5, line

32); and

        a post-processing unit which, performs a time-frequency transformation on the

decoded block data, generates an image corresponding to the predetermined region

("performs the operations of the subband analysis unit 300 in reverse to reconstruct the

images", column 5, lines 42-43), and reconstructs a current block included in the

predetermined region ("determine which areas of the subbands have been repeated

from the previously encoded subband", column 5, lines 34-36), based on the additional

information ("side information", column 5, line 33) on the predetermined region of the

signal ("remaining subbands", column 3, lines 7-10).

However HARTUNG does not disclose that decoding is done on an audio signal

or that the image is a time-frequency band table formed by dividing the transformed

decoded block data into a plurality of frequency blocks in each frame and a time-

frequency index combination.

In the same field of media analysis, HOLMES discloses an image that represents

an audio signal. HOLMES teaches a time-frequency band table ("spectrogram", see

Figure 2.11) formed by dividing the transformed decoded block data into a plurality of

frequency blocks in each frame and a time-frequency index combination (paragraph 2,

the plot shows the value of the Fourier transform at a particular time at a particular

frequency. Each pixel becomes a frequency block at each frame, forming a time-

frequency index).

It would have been obvious to a person of ordinary skill in the art at the time the

invention was made to use the image decoding method of HARTUNG on the

spectrogram of HOLMES, where each pixel of the spectrogram corresponds to the

energy of the audio signal at single time and frequency, and a small column of pixels

corresponds to the energy in a subband at a single time. This would have been done in

order to more efficiently decode the spectrogram by taking advantage of the temporal

correlations within the subbands (see HARTUNG, column 3, lines 9-12).

29.   Regarding **claim 31**, HARTUNG further teaches that the additional information

includes index information on a nearest neighbor block of a current block in the

predetermined region ("side information indicating which pixels are repeated from the

previous frame", column 3, lines 62-64, where the previous frame has an index at i,j,

and t, see equation 1).

30.   Regarding **claim 33**, HARTUNG and HOLMES further teach that the generated

time-frequency band table is updated by a reconstructed current block ("determine

which areas of the subbands have been repeated from the previously encoded

subband", HARTUNG, column 5, lines 34-36, using the repeated subbands to generate

the image is inherent).

31.   Regarding **claim 34**, HARTUNG teaches a decoding apparatus ("decoder",

column 5, line 31) for decoding a signal comprising:

        a nearest neighbor block information extracting unit which extracts nearest

neighbor block information ("side information"; column 5, line 33) from an input

bitstream ("coded signals", column 5, line 32);

an image generation unit which, based on the input bitstream, generates an

image ("performs the operations of the subband analysis unit 300 in reverse to

reconstruct the images", column 5, lines 42-43); and

a redundant block reconstruction unit which, based on the extracted nearest

neighbor block information, determines whether or not a block being currently decoded

is a redundant block ("determine which areas of the subbands have been repeated from

the previously encoded subband", column 5, lines 34-36), and if the block being

currently decoded is the redundant block, the redundant block reconstruction unit

reconstructs the redundant block ("determine which areas of the subbands have been

repeated from the previously encoded subband", column 5, lines 34-36) based on the

extracted nearest neighbor block information ("side information", column 5, line 33).

However HARTUNG does not disclose that decoding is done on an audio signal

or that the image is a time-frequency band table, performing a time-frequency

transformation on the input audio signal, generating a time-frequency band table by

dividing the transformed input audio signal into a plurality of frequency blocks in each

frame and a time-frequency index combination.

In the same field of media analysis, HOLMES discloses an image that represents

an audio signal. HOLMES teaches a time-frequency band table ("spectrogram", see

Figure 2.11) performing a time-frequency transformation on the input audio signal

(Fourier transform is used, page 23 paragraph 1), generating a time-frequency band

table (see Figure 2.11, "use the horizontal dimension for time, the vertical dimension for

frequency", p. 23, paragraph 1) by dividing the transformed input audio signal into a

plurality of frequency blocks in each frame and a time-frequency index combination

(paragraph 2, the plot shows the value of the Fourier transform at a particular time at a

particular frequency. Each pixel becomes a frequency block at each frame, forming a

time-frequency index.).

It would have been obvious to a person of ordinary skill in the art at the time the

invention was made to use the image decoding method of HARTUNG on the

spectrogram of HOLMES, where each pixel of the spectrogram corresponds to the

energy of the audio signal at single time and frequency, and a small column of pixels

corresponds to the energy in a subband at a single time. This would have been done in

order to more efficiently decode the spectrogram by taking advantage of the temporal

correlations within the subbands (see HARTUNG, column 3, lines 9-12).

32.   Regarding **claim 35**, HARTUNG and HOLMES further teach that the redundant

block reconstruction unit reconstructs an entire spectrum corresponding to the input

audio bitstream by using the reconstructed redundant block ("performs the operations of

the subband analysis unit 300 in reverse to reconstruct the images", HARTUNG,

column 5, lines 42-43, where the image is a complete spectrogram according to

HOLMES, the spectrogram representing the entire spectrum of an audio signal, see

HOLMES, Figure 2.11).

33.   Regarding **claim 36**, HARTUNG and HOLMES further teach that the time-

frequency band table generation unit updates the time-frequency band table based on

the reconstructed redundant block ("determine which areas of the subbands have been

repeated from the previously encoded subband", HARTUNG, column 5, lines 34-36,

using the repeated subbands to generate the image is inherent).

34.   **Claims 2, 15, 23, and 32** rejected under 35 U.S.C. 103(a) as being unpatentable

over HARTUNG et al. (Patent No. US 5,309,232) in view of HOLMES et al. (Speech

Synthesis and Recognition) in further view of NAKAMURA (Patent No.: US 6,226,325).

35.   Regarding **claim 2**, HARTUNG and HOLMES teach all of the claimed limitations

of claim 1.

However, HARTUNG and HOLMES do not disclose the frequency of the

encoded blocks.

In the same field of media analysis, NAKAMURA discloses the compression of

high-frequency content. NAKAMURA teaches that the frequency of a block being

currently encoded is equal to or greater than a threshold frequency (see FIG. 1A, the

high frequency signal is encoded separately), and that the bitstream includes block

information on a block included in a frequency band lower than the threshold frequency

(see FIG. 1A, the output bitstream contains both high and low frequency information)

and nearest neighbor block information of a block included in a frequency band equal to

or higher than the threshold frequency (see FIG. 1A, only the high frequency portion of

the signal is compressed).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to perform the encoding method of HARTUNG and HOLMES on the high frequency portion of signal as taught by NAKAMURA in order to reduce the number of bits required for storage (see NAKAMURA, column 3, lines 45-49).

36.   Regarding **claim 15**, HARTUNG and HOLMES teach all of the claimed limitations of claim 14.

However, HARTUNG and HOLMES do not disclose the frequency of the encoded blocks.

In the same field of media analysis, NAKAMURA discloses the compression of high-frequency content. NAKAMURA teaches that the frequency of a block being currently encoded is equal to or greater than a threshold frequency (see FIG. 1A, the high frequency signal is encoded separately), and that the bitstream includes block information on a block included in a frequency band lower than the threshold frequency (see FIG. 1A, the output bitstream contains both high and low frequency information) and nearest neighbor block information of a block included in a frequency band equal to or higher than the threshold frequency (see FIG. 1A, only the high frequency portion of the signal is compressed).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the encoding apparatus of HARTUNG and HOLMES on the high frequency portion of signal as taught by NAKAMURA in order to reduce the number of bits required for storage (see NAKAMURA, column 3, lines 45-49).

37.   Regarding **claim 23**, HARTUNG and HOLMES teach all of the claimed

limitations of claim 21.

Howevér, HARTUNG and HOLMES do not disclose the frequency of the

decoded blocks.

In the same field of media analysis, NAKAMURA discloses the compression of

high-frequency content. NAKAMURA teaches that the predetermined region is a high

frequency region (see FIG. 1B, only the high frequency portion of the signal is

decoded).

It would have been obvious to a person of ordinary skill in the art at the time the

invention was made to perform the decoding method of HARTUNG and HOLMES on

the high frequency portion of signal as taught by NAKAMURA in order to reduce the

number of bits required for storage (see NAKAMURA, column 3, lines 45-49).

38.   Regarding claim 32, HARTUNG and HOLMES teach all of the claimed limitations

of claim 30.

However, HARTUNG and HOLMES do-not disclose the frequency of the

decoded blocks.

In the same field of media analysis, NAKAMURA discloses the compression of

high-frequency content. NAKAMURA teaches that the predetermined region is a high

frequency region (see FIG. 1B, only the high frequency portion of the signal is

decoded).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the decoding apparatus of HARTUNG and HOLMES on the high frequency portion of signal as taught by NAKAMURA in order to reduce the number of bits required for storage (see NAKAMURA, column 3; lines 45-49).

39.   **Claims 6, 13, 25, and 29** rejected under 35 U.S.C. 103(a) as being unpatentable over HARTUNG et al. (Patent No. US 5,309,232) in view of HOLMES et al. (Speech Synthesis and Recognition) in further view of ZIBMAN et al. (Patent No.: US 4,748,579).

40.   Regarding **claim 6**, HARTUNG and HOLMES teach all of the claimed limitations of claim 1.

However, HARTUNG and HOLMES do not disclose the use of scale factors.

In the same field of media analysis, ZIBMAN discloses using scale factors to represent frequency data. ZIBMAN teaches that the nearest neighbor block information includes scale factor information ("computing the scale factor", column 7, line 29).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to represent the encoded information of HARTUNG and HOLMES using scale factors as taught by ZIBMAN in order scale the numbers to a certain number of bits (see ZIBMAN, column 7, lines 27-58).

41.   Regarding **claim 13**, HARTUNG and HOLMES teach all of the claimed limitations of claim 7.

However, HARTUNG and HOLMES do not disclose the use of scale factors.

In the same field of media analysis, ZIBMAN discloses using scale factors to represent frequency data. ZIBMAN teaches that the nearest neighbor block information includes scale factor information ("computing the scale factor", column 7, line 29).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to represent the encoded information of HARTUNG and HOLMES using scale factors as taught by ZIBMAN in order scale the numbers to a certain number of bits (see ZIBMAN, column 7, lines 27-58).

42.   Regarding **claim 25**, HARTUNG and HOLMES teach all of the claimed limitations of claim 21.

However, HARTUNG and HOLMES do not disclose the use of scale factors.

In the same field of media analysis, ZIBMAN discloses using scale factors to represent frequency data. ZIBMAN teaches that the additional information includes scale factor information ("computing the scale factor", column 7, line 29).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to represent the encoded information of HARTUNG and HOLMES using scale factors as taught by ZIBMAN in order scale the numbers to a certain number of bits (see ZIBMAN, column 7, lines 27-58).

43.   Regarding **claim 29**, HARTUNG and HOLMES teach all of the claimed limitations of claim 27.

However, HARTUNG and HOLMES do not disclose the use of scale factors.

In the same field of media analysis, ZIBMAN discloses using scale factors to represent frequency data. ZIBMAN teaches that the nearest neighbor block information includes scale factor information ("computing the scale factor", column 7, line 29). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to represent the encoded information of HARTUNG and HOLMES using scale factors as taught by ZIBMAN in order scale the numbers to a certain number of bits (see ZIBMAN, column 7, lines 27-58).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOUGLAS C. GODBOLD whose telephone number is (571)270-1451. The examiner can normally be reached on Monday-Thursday 7:00am-4:30pm Friday 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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DCG

/Patrick N. Edouard/
Supervisory Patent Examiner, Art Unit 2626